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Lophium elegans (*Ascomycota*), a rare European species

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Abstract — *Lophium elegans* (*Mytilinidiales, Mytilinidiaceae*) is recorded for the first time in northern Europe. It was found on *Juniperus communis* in two locations in Finnmark County, Norway, which represent the northernmost finds for the species. A morphological description of the species is given and its ecology and distribution discussed.

Key words — host preference, junipericolous fungi

Introduction

Lophium elegans is an ascomycete known to science for about 60 years (Zogg 1954) but collected only a few times by a small number of mycologists. The species has been found only in Europe where it has been reported from rather high altitudes in southern France (Alpes Maritimes, Hautes Alpes), northern Italy (South Tyrol), Switzerland, and Scotland (Zogg 1962, Kirk & Spooner 1984). The finds from southern Europe were all made between 1940 and 1960 (Zogg 1962), and the two finds from Great Britain date back to the beginning of the 1980s (Kirk & Spooner 1984). In 2008, the species was collected from near Dijon, in the Burgundy region of east central France (Lechat 2013).

Lophium elegans seems to be restricted to *Juniperus*. In Great Britain and France the species was found on *J. communis*, and in Italy and Switzerland on *J. communis* ssp. *nana* [as *J. nana*] (Zogg 1962, Kirk & Spooner 1984, Lechat 2013). Apart from *Lophium igoschinae* Chleb., found on *Dryas* (*Rosaceae;* Chlebicki & Knudsen 2001), all *Lophium* species have been collected only from coniferous substrates (Zogg 1962, Boehm et al. 2009). Zogg (1962) reported *Lophium elegans* as growing on bark of small living and dead twigs of its host tree, while Ellis & Ellis (1997) reported it on wood of *J. communis*.

Here we report three records of *L. elegans* from Northern Norway, where the species was found on *J. communis* in two different locations. These represent the first northern European records of the species.

Materials & methods

Lophium elegans was collected during ascomycete field inventories in Finnmark, Norway, 2010 and 2011. Geographical coordinates were taken in the field using GPS. The collections were studied using Wild M10 and Zeiss 475052-9901 dissecting microscopes and Leitz DMRBE and Zeiss 473028 light microscopes. Microscopic slides were prepared from dried herbarium material and mounted in water for measurements and photographs. Photographs were taken with Olympus UC30 and UC50 digital cameras. Collector abbreviations include GM (Mathiassen) and AG (Granmo). Specimens are deposited in the herbarium of Tromsø University Museum, Norway (TROM).

Taxonomy

Lophium elegans H. Zogg, Ber. Schweiz. Bot. Ges. 64: 141 (1954) Fig. 1

Ascomata 200–500 µm high, 180–340 µm wide, and 90–120 µm thick, seated upright on bark or erumpent through cracks in bark, scattered or clustered, laterally flattened and often striate, usually axe-head shaped (dolabriform), somewhat tapering towards base, with a long slit-like ostiolum along the ± sharp upper edge, brittle and black. Asci 160–210 × 7.2–8.7 µm, cylindrical, bitunicate, short stiped, containing 8 spirally entwined spores. Paraphysoids ca. 1.5 µm diam., long, branched, anastomosing, septate and hyaline. Ascospores 210–265 µm × 1.3–2 µm, filiform, tapered at ends, multiseptate with septa at intervals of mostly 5–8 µm, yellowish hyaline, gradually becoming spirally arranged within the ascus.

Specimens examined: **NORWAY, Finnmark: Municipality of Alta**, the valley Eibydalen, 69°46'30"N 23°18'49"E, 217 m asl, on dead twig of *Juniperus communis* L., 17.VIII.2011, G. Mathiassen & A. Granmo, GM 12472 C (TROM F-41138); 69°46'31"N 23°18'28"E, 204 m asl, on dead twig of *J. communis*, 17.VIII.2011, A. Granmo & G. Mathiassen, AG 25A/2011 (TROM F-25034). **Municipality of Karasjok**, Basavzeguoika, in the upper, southern part of the Anarjohka river valley, 53°20'689" N 33°22'29" E, 205 m asl, on dead twigs of *J. communis*, 18.VIII.2010, G. Mathiassen & A. Granmo, GM 12297 A (TROM F-25741).

Discussion

Lophium elegans was found on *Juniperus communis* at Basavzeguoika 205 m asl, in the Anarjohka river valley, Karasjok, in August 2010. This area is a continental part of Northern Norway with relatively high summer temperatures (mean of the warmest month, July, 13.1°C; DNMI 1991) and low precipitation (interpolated annual precipitation 366 mm; Moen 1998). The species was also found twice in 2011 in the valley Eibydalen in Alta. The Alta area is an inner fjord district in the middle boreal zone with luxuriant woodland and

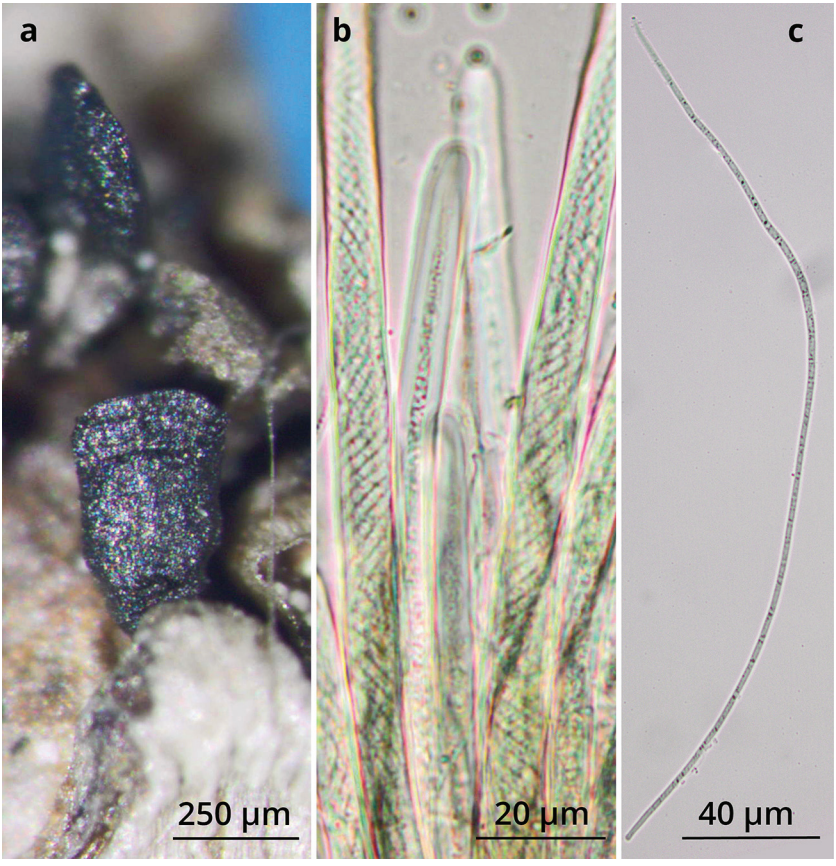

Fig. 1. *Lophium elegans*: a. Ascomata (GM 12297 A). b. Asci containing ascospores (GM 12472 C). c. One ascospore (GM 12472 C). Photos: GM (a-b), TR (c).

warm summers (mean of the warmest month, July, 13.4°C; DNMI 1991). Our first find at Basavzeguoika and the world's northernmost finds in Eibydalen represent the first records of *L. elegans* from northern Europe despite earlier searches by the renowned Swedish ascomycete researchers Kerstin and Lennart Holm. They were well aware of this species, but did not find it in any of the Nordic countries (Holm & Holm 1977). The species has a disjunctive distribution pattern on the European mainland (Fig. 2), similar to that of a few other pyrenomycetous species, e.g., *Glyphium grisonense* Math., *Hypoxylon macrosporum* P. Karst., and *Saccardoella kanderana* Math. (Mathiassen 1989, 1993; Granmo 1999; Mathiassen & Granmo 2012). Therefore, as *L. elegans* is known from Scotland, it is likely that some of those species may also occur at

Fig. 2. World distribution of *Lophium elegans*. The large dot represents 6 localities along the Alpes Maritimes, where Zogg collected the species in 1955 and 1960. Map: E. Høgtun ©, Tromsø University Museum, 2013.

high altitudes in the northern British Isles. Although *L. elegans* is undoubtedly a rather rare species in Europe, we expect it to occur occasionally along the

whole Scandinavian mountain range as well as in other high altitude localities along the Alps, e.g., in Austria and southern Germany.

The Norwegian records strengthen the impression of *L. elegans* as being restricted to *Juniperus,* which we consider a junipericolous fungus. The three Norwegian specimens had ascocarps growing on bark as well as on rather small twigs. Nevertheless, one single ascocarp was observed growing on a needle, which has never been reported earlier (cf. Kirk & Spooner 1984). Because of this and Ellis & Ellis' (1997) observation from naked wood, *L. elegans* should be considered not as a strictly, but rather a predominantly, corticolous species.

The ascospores of *L. elegans* are very long and arranged in a spiral parallel configuration in the asci, which Zogg (1954) termed "parallel-spiralig aufgerollte" spores. However, Kirk & Spooner (1984) maintained that this character may be exhibited only at maturity, in that ascospores in the British collections lay parallel in young immature asci and spirally coiled in mature asci. One Norwegian sample (AG 25A/2011) supports this observation. *Lophium elegans* is morphologically rather similar to *L. mytilinum* (Pers.: Fr.) Fr., which differs by its longer, thicker ascocarps (Zogg 1962). In addition, *L. mytilinum* ascospores always lie parallel in, and remain shorter than, the asci (Zogg 1962). Kirk & Spooner (1984) pointed out that *L. elegans* was evidently very closely related to *L. mytilinum* but distinguished particularly by the spiral coiling of the ascospores. However, molecular data indicate that the two species are not closely related within the family *Mytilinidiaceae* (Boehm et al. 2009), and that *Lophium elegans* and *L. mytilinum* might, in fact, be placed in two separate genera in that family. According to Boehm et al. (2009) both *Lophium* and *Mytilinidion* are polyphyletic. However, until the type species of *Mytilinidion*, *M. aggregatum* (DC.: Fr.) Duby, and type species of other genera in *Mytilinidiaceae* are included in a common phylogenetic analysis with taxa mentioned by Boehm et al. (2009), any new nomenclatural combinations can only be speculative.

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